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### Deposited in DRO:

15 March 2019

### Version of attached file:

Published Version

### Peer-review status of attached file:

Peer-reviewed

### Citation for published item:

Jack, Christine (2019) 'Enhancing the use of educational technology in the early years.', in *Imagining Better Education: Conference Proceedings 2018*. Durham, England: Durham University, School of Education, pp. 83-94. *Imagining Better Education*.

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## **Enhancing the use of Educational Technology in the Early Years**

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## **Enhancing the use of Educational Technology in the Early Years**

Educational technologies can have a positive impact on teaching and learning. Recent research suggests that these technologies are more embedded in early years settings than they were in the past, but practitioners may not be using them to their full potential. This project explores how practitioners can be supported to use them more effectively.

This paper describes a project involving eight settings in the North East of England where early years practitioners conducted their own action research projects. Each project was designed to meet an identified need in the participant's own setting.

The project shows that action research projects have the potential to support the implementation of technology and this approach appears to be more successful than regular training.

Keywords: educational technology; action research; early years education; CPD

### **Introduction**

This project investigates whether establishing an action research network can be an effective way of supporting early years practitioners to use educational technology (EdTech) more effectively. In England, the Early Years Foundation Stage (EYFS) refers to the stage between birth to five years old, this project involved practitioners working with children aged two to five years in EYFS settings.

### ***What are educational technologies?***

The literature review described later in this article shows that the term educational technology has traditionally been used to refer to computers, tablets and interactive whiteboards. There are many other devices available including: digital and video cameras, programmable toys, microphones, role play equipment and 'sound buttons' that will record and play audio recordings.

### *What is effective use?*

While there are ongoing debates about the impact of these technologies, there is a growing consensus that they can have a positive impact on teaching and learning, if they are used effectively (Vaughan & Beers, 2017). ‘Effective use’ means different things to different people, and links to the reasons EdTech is being used.

Hawkrigde (1990) identified four common rationales for the use of EdTech:

- Social: technology is everywhere in society, this should be reflected in educational settings
- Pedagogical: technology can have a positive impact on teaching and learning
- Vocational: technology is necessary for future careers
- Catalytic: technology can profoundly change the education system

The EYFS curriculum (Standards and Testing Agency, 2017) states that children should be able to:

- recognise that a range of technology is used in places such as homes and schools
- select and use technology for particular purposes

The exemplification materials expand on this by saying, ‘The child chooses ... technological opportunities ... as a tool to enhance and extend his or her learning’ (Standards and Testing Agency, 2012). The curriculum refers to the social and pedagogical rationales.

Effective use of technology does not just refer to supporting ‘academic’ subjects such as maths or literacy. The EYFS curriculum also highlights characteristics of learning including learning dispositions: cooperation, curiosity, reflection, perseverance, confidence and independence.

It is not enough to put EdTech into a setting and expect it to make a difference (Higgins, Kokotsaki, & Coe, 2012). EYFS practitioners need to link EdTech to specific  
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needs they have identified within their settings, whether these relate to curriculum areas or characteristics of learning.

### **The current context**

A systematic approach was used for reviewing the literature. The Education Resources Information Centre (ERIC) was searched using the following Boolean string:

("computer" OR "technology" OR "digital" OR "ICT") AND ("early years" OR "pre-school" OR "kindergarten" OR "young children"). Results were limited to peer-reviewed journal articles from two years: 1996 and 2016. 1996 was chosen as this was when the Desirable Outcomes for Children's Learning were published in England (School Curriculum and Assessment Authority & Department for Education and Employment, 1996); this was the first EYFS 'national curriculum' (Anning, 1999). 2016 was the last full year before the literature review was conducted.

All 29 articles from 1996 had computers as the main focus. By 2016 the focus had expanded to computer, tablets and interactive whiteboards, 74 of the 84 articles focused on these. Even when articles listed a range of EdTech, the analysis often focused on this limited range of devices. Only four articles had a broader focus. Articles described how often EdTech was being used and in which curriculum areas, they did not usually say how EdTech was being used.

Plowman and Stephen (2013) suggested that technology use was limited to using computers during free play time, or to a focus on operational skills or turn taking.

To find out whether this is an accurate picture, Jack and Higgins (2018) conducted interviews in 20 settings in the North East of England. Some of their findings are relevant here. The interviewees' interpretation of the term 'educational technology'

was much broader than the literature described earlier suggests. This is important as practitioners' understanding of the definition of EdTech can impact on their practice. A focus on 'just computers' has been linked to a 'mechanistic approach' where children only learn how to operate technology, while a broader view is seen to provide 'scope for more imaginative, creative and collaborative activities' (Plowman, McPake, & Stephen, 2012).

Again, this view was supported by the interviews which showed that a range of technology was being used creatively to support teaching and learning across the curriculum and to support a range of learning dispositions. The interviews showed that EdTech was being used to support the pedagogical and social rationales but revealed a number of barriers including the need to increase their colleagues' confidence and skills and a lack of available training (Jack & Higgins, 2018).

Top-down training has not been linked to sustained impact in the classroom (Wall & Hall, 2017) and collaborating with peers is seen as one of the best ways to provide support (Shields & Behrman, 2000). This research aimed to find out if action research would result in a more sustained positive impact in the classroom than standard training.

Action research aims to find a solution to problems identified by practitioners within the context being studied. It would allow the use of EdTech to be linked to practitioners' practice and beliefs. This has been shown to increase the likelihood of practitioners using technology (Higgins & Moseley, 2001).

## **Methodology**

*The term 'action research' is becoming so widely and loosely applied that it is becoming meaningless' (Tripp, 2005)*

An evaluation of an action research project needs to provide details of what was done and be clear about how this fits within the action research field. This research can be Imagining Better Education: Conference Proceedings 2018

described as rigorous self-reflection, similar to the approach described by Baumfield, Hall, and Wall (2013).

### ***The Projects***

The action research group was made up of eight EYFS practitioners with an interest in improving their use of EdTech. They included a preschool manager, nursery teachers from stand-alone nurseries and teachers from nursery classes and reception classes in local authority schools. They were each supported to plan a project that would target a specific need in their setting, these included:

- using EdTech to record children's learning and support later reflection
- using EdTech to enhance the children's language and communication skills
- developing the practitioners' own skills and confidence

Their projects fit within the practical, personal and professional approach to action research described by Rearick and Feldman (1999) who describe a cyclical process used to evaluate practice, plan changes, implement the changes and evaluate them before moving on to another cycle.

### ***Data collection***

Over the two years of the project, all settings were visited twice to observe practice and interview the participants. These interviews included questions about the participant's project and the action research process. Participants were also invited to termly meetings which facilitated collaboration.

Group meetings provided an opportunity for participants to share their progress. Participants were encouraged to justify their decisions and actions, and to use questioning to challenge each other. The aim was for the research process to be more rigorous than the reflection that naturally occurs within classrooms. Meetings also

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included discussions about key themes: defining EdTech, discussing how EdTech could be used and what effective EYFS pedagogy looks like. Audio recordings and field notes were written up after each meeting. Participants completed an end of project evaluation questionnaire which provided extra details about the action research process.

NVivo was used to conduct a thematic analysis of the transcripts (Schreier, 2014).

### ***Ethics***

All participants gave informed consent, participation was voluntary, with the right to withdraw at any point, and anonymity was guaranteed. Ethical approval was granted by Durham University.

### **Was action research an appropriate approach?**

#### ***Meeting the settings' needs***

The end of project evaluations indicated that the participants' main aims had been achieved. The eight settings were at very different stages in terms of using EdTech. For some, the project was a way of exploring what was possible and identifying what resources they needed to purchase. Others already had access to a range of EdTech but wanted to use it more effectively to support their children's learning.

*I was guilty of 'what do I do with these iPads we've been given? We just got them out for an afternoon... [but now] we are using the iPad because it really enhances what you are trying to achieve (Setting 7)*

At the end of the project, all participants were able to describe their project's impact and provide evidence, including progress data.

*This year we have had the most number of 'exceeding' children in ICT (Setting 7)*



### ***Impact on participants***

The project provided time to reflect and practice in all settings had improved.

*In terms of the influence it's had for moving us on to thinking more about IT, it has been great (Setting 1)*

Participants wanted to continue to develop their knowledge and skills.

*It's still quite scary I have to say because it's a whole different way of working, but I am excited by it because I can see the potential (Setting 3)*

One person thought they would have been able to make changes to their own practice without being involved in the group, but the project had enabled them to talk to colleagues within their own setting and support them to make changes to their practice.

*I might have done this myself anyway, but I'm not sure other staff would have done (Setting 5)*

### ***Empowering***

The project increased people's confidence, enabling some of the group to ask for more resources or to justify their use of EdTech to colleagues who did not see the potential benefits.

*I'd put my action plan together ... we had a meeting with our LA advisor ... I said we were doing this ... she said, 'I don't see the point' ... I was 'I really do' ... it has made me re-evaluate [and say] 'no, this is really important for us as a school' (Setting 6)*

### ***Comparison with training***

Feedback was collected throughout the project so even participants who left before the end were able to comment on the value of the action research process. Everyone said the project was better than traditional training. Training was not aimed at their specific

needs so was often not put into practice. Action research allowed them to focus on their own priorities.

*with training, a lot of the things you look at are 'yes that's brilliant' but then you come back into the classroom and you just fall straight back into the old routines and you forget about things ... [with this project] I've always had a very clear objective... it's very clearly set out ... [and] because I've always had that in my head I have done it.*  
(Setting 4)

### **Practical challenges**

*when I first spoke to my head and she said, 'what is [the project] ... is this going to cause more work' and I was 'no cos it's what we're doing anyway, it's part of the action plan (Setting 6)*

Although meetings and visits to other settings were seen as the most valuable aspects of the project, only one participant attended all the meetings. One did not attend any, though she did visit another setting to see how they were implementing EdTech. This was due to the challenge of running the project alongside the practitioners' already busy workloads. Three of the group left after a year due to sickness, maternity leave and changing settings.

Despite these challenges, all of the participants were positive about the approach and the impact it had made on their thinking and practice.

*Once you make a start you think 'I could have been doing it all the time' (Setting 3)*

Only the person who had not managed to attend any meetings said they would not participate in action research again.

### **Conclusion**

For these practitioners, action research effectively supported their use of EdTech. They

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all planned to continue their projects after the research project had finished. Evidence from interviews and the evaluation forms suggested that the change to their practice was sustainable.

This approach is recommended to settings wanting to use EdTech more effectively, but it is not possible to say if it would always be successful. Action research cannot be validated by replication (Wallace, 1987) as new participants would always need to adapt the process to meet their own priorities.

The project is being written up as part of a doctoral thesis and will be publicly available on completion. This may help other practitioners to decide if action research would be a valuable approach for them to use.

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